

ABSTRACT

[0063] A tubular structure comprising multiple overlapping layers surrounding a lumen has flexibility and structural integrity by allowing portions of the layers to slip relative to each other. One embodiment includes a support layer having a wired coil, braid or weave support element underlies at least one overlying layer. The support layer is fixed to the overlying layer at a bonding point and the remaining portion of the support layer is not fixed to the overlying layer, i.e. “free portion”. The support layer is permitted to slip at the free portion of the support layer, relative to the overlying layer. Further flexibility may be provided by a coil element of the support layer having substantial gaps between the loops of the coil to impart high flexibility of the tubular structure. In one embodiment, an etched sheath is heat shrunk around an underlying layer with a shrink ratio of 25 percent or less of its original diameter, such that the etchings are at least substantially preserved through the shrinkage process.